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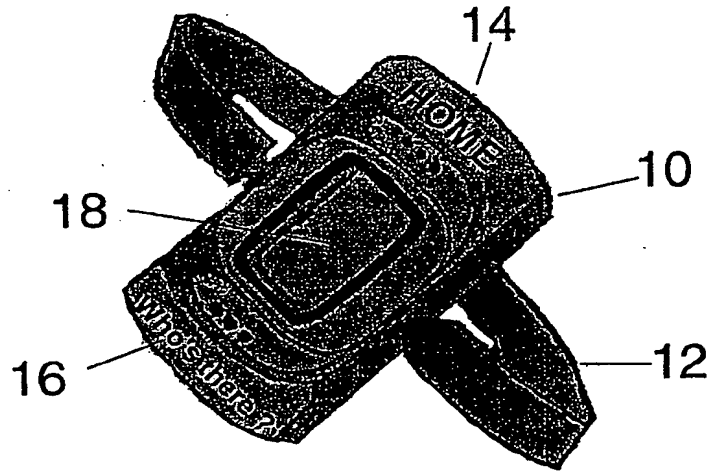
(54) Title: EMERGENCY MOBILE RADIO TELEPHONE WITH REDUCE KEY SET



(57) Abstract

A mobile radio telephone or portable hot link communicator is described which provides a simple, efficient and effective means of communication to enable a child or elderly person to communicate with a known parent, relative or friend carrying a standard mobile telephone. The hot–link communicator is wrist worn, or hangs from a cord around the wearer's neck, and it comprises a preprogrammed Module that links it with preferably only one other mobile or fixed telephone. The hot link communicator comprises the very basic functionality, and in some embodiments, no display, only a preprogrammed dialling button and an answer button. The hot link communicator makes possible communication between parents needing to communicate with their children and between supervising adults and elderly persons needing assistance in that the children and elderly persons do not need to input numbers in sequence via a key pad or search for a telephone in the rain and dark.

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EMERGENCY MOBILE RADIO TELEPHONE WITH REDUCE KEY SET

DESCRIPTION

BACKGROUND OF THE INVENTION

The invention relates to a portable communicating apparatus. More particularly, it relates to a portable communicating hot link apparatus which can provide a simple, efficient and effective means of communication between children and their parents, between elderly persons and caring relatives, and between mentally less-able individuals and supervising adults.

Children often disappear from view from parents causing anxiety and worry until their whereabouts is known again. Mobile telephone technology, such as GSM, DCS, and CDMA can provide an essential link between older children and their parents, but this is not the answer for younger children, elderly persons, or mentally less-able individuals. The mobile telephone is very valuable and might easily be lost or stolen from a child or from a mentally less-able individual. Similarly, elderly citizens may experience distress should they become lost in a crowd or lose sight of a supervising adult. In all these instances, children, mentally less able individuals, and elderly persons would quite likely experience difficulty in pressing the right sequence of keys on the mobile telephone, particularly if it were dark or in instances of bad weather.

Elderly persons often make appointments to meet supervising adults, such as their grown up children, but due to the fast commotion of life, they may miss the particular agreed meeting point or they may forget the time of the meeting. There is clearly a need for a communicating device which can address the communication technology requirements of this situation.

Current mobile phone technology products do not offer a very simple and cheap technology solution which addresses this essential one-to-one communication need.

In addition to these specific communication problem needs, there is a growing concern about the potentially harmful effect of electromagnetic radiation upon the developing brains of young children. Within this context, there is an opportunity to design a communication device for children which positions the radiating electromagnetic field of a communication device away from the close proximity of the brain. In this regard, parents who maintain the belief that mobile telephones present a health risk due to the radiating antenna, may rest secure in the knowledge that this risk can be significantly reduced.

Further to these limitations of existing technologies, and so far as is known, no portable communication apparatus is presently available which serves to offer a hot link communicator comprising the minimum mobile telephone functionality suited to the specific needs of this problem area.

OBJECTS OF THE INVENTION

Accordingly, it is an object of the present invention to provide a novel portable hot link communicating apparatus to meet the minimum specific requirements of parents wishing to have the facility of immediate communication with their children, between mentally less-able individuals and supervising adults, and between elderly persons and caring relatives.

It is a further object of the present invention to provide a novel portable hot link communicating apparatus which comprises a preprogrammed identity module comprising the number of the mobile or fixed telephone to which the hot link communicating device is linked.

It is a further object of the present invention to provide a novel portable hot link communicating apparatus which may comprise no key pad at all, other than a simple array of press pads to initiate a call or to answer an incoming call thereby minimising cost and functionality of the said communication apparatus.

It is a further object of the present invention, to provide a novel portable hot link communicating apparatus which may comprise no display thereby minimising cost and functionality of the said communication apparatus.

It is a further object of the present invention, to provide a novel portable hot link communicating apparatus which comprises a simple and effective way of attaching it to the wearer such as a wrist strap, a hip belt clip, or a neck cord. In this context, it is a further object of the invention to provide a portable hot link communicating apparatus which may function effectively while worn on the wrist such that the electromagnetic field of the radiating antenna is positioned away from the close proximity of the developing brains of young children while a call is in progress.

It is a further object of the present invention, to provide a novel portable hot link communicating apparatus which may be moulded in any of a number of bright colours and designs which are attractive to young children and which are therefore readily worn by said children.

It is a further object of the present invention, to provide a novel portable hot link communicating apparatus which makes use of state of the art battery technology such that the hot link communicating device may be powered by a light-weight, low volume rechargeable battery with sufficient power to remain active for 24 hours.

Other objects and advantages of this invention will become apparent from the description to follow when read in conjunction with the accompanying drawings.

BRIEF SUMMARY OF THE INVENTION

Certain of the foregoing and related objects are readily-attained according to the present invention by the provision of a novel portable communicating apparatus or hot link communicator which serves to address the diverse requirements of communication between parents and children, between supervising adults and mentally less-able individuals, and between elderly persons and caring relatives.

The hot link communicator preferably comprises a basic mobile telephone circuit having no key pad or display and a rechargeable battery and antenna and a preprogrammed identity module linking it to a single mobile or fixed telephone. Where appropriate, in an alternative embodiment the hot link communicator is able to place a call to one of a plurality of separate telephone numbers comprising mobile telephones, fixed telephones or other hot link communicators. In one embodiment in which the hot link communicator is able to select one of two numbers, an additional separate call button is provided for this purpose. In an alternative embodiment, selection of one of a plurality of numbers is done using the single call initiate button and by sequentially stepping through the numbers stored in the preprogrammed identity module. The indication of which number is being selected can be shown on the screen of the hot link communicator in a number of embodiments; alternatively one of a number of coloured lights may be programmed to light up to avoid the expense of the screen.

To all extents and purposes, the hot link communicator, works identically as a mobile telephone when it is active and receives a call. It differs from

the complexity of a mobile telephone in that it comprises no key pad, and in its place, it comprises the circuitry to dial a number preprogrammed into its identity module.

The linked mobile telephone, or any mobile telephone comprising the same type of identity module, is thus easily employed to preprogram the unique number of any mobile or fixed telephone to which the hot link communicator is to be linked. This programming feature offers a significant degree in freedom in linking any particular hot link communicator with any particular mobile or fixed telephone. Furthermore, the same method may be employed to program two identity modules and thereby link two hot link communicators to each other.

Other objects and features of the present invention will become apparent from the following detailed description considered in connection with the accompanying drawings which disclose one embodiment of the invention. It is to be understood, however, that the drawings are designed for the purpose of illustration only and that the particular description of the portable hot link communicating apparatus is given by way of example only and does not limit the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an illustration of one embodiment of the portable hot link communicating apparatus.

FIG. 2 is an illustration of the use of the hot link communicator within the context of the mobile telephone network.

FIG. 3 is a circuit block schematic indicating the necessary functional components of the hot link communicating apparatus.

FIG.4 comprises a schematic of a number of hot link mould shapes that may be used to maximise the acceptability of the product to children and adults.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now in detail to the drawings and in particular FIG. 1 thereof, therein illustrated is a portable hot link communicating apparatus embodying the present invention.

This device comprises a novel combination of existing technologies and features which make possible the existence of a new and improved portable hot link communicating apparatus to address the needs of parents wishing to have the facility of immediate communication with their children and vice versa, between supervising individuals and mentally less-able persons, and between elderly persons and caring relatives.

Furthermore this novel hot link communicator is able to receive and send calls to a preprogrammed mobile or fixed telephone by making use of simplified circuitry to select and call at least one number programmed into the identity module associated with the hot link communicator.

This unique combination of features greatly simplifies the hot link communicator circuitry and thereby reduces the cost of the device.

In a preferred embodiment, the invention is suitably employed within any specific mobile telephone system such as GSM, DCS, and CDMA. For the purpose of detailed description and in order to make clear the advantages and benefits of the hot link communicator, the particular embodiment of the GSM standard of mobile telephone technology is selected. Furthermore, the corresponding identity module within the GSM standard of mobile telephone technology, the subscriber identity module, or SIM card is described. This selection of GSM is made by way of example only and does not limit the

scope of the invention to the GSM standard since it is obviously and suitably adapted to DCS and CDMA telephone technologies by making the corresponding and obvious technical modifications to the hot link communicator circuitry.

In the preferred embodiment, the essential hardware components comprise a basic GSM telephone circuit, a rechargeable battery, a compact GSM antenna, a brightly coloured moulding, in the instance that it is intended for children, a preprogrammed SIM card, and two buttons: one to initiate a telephone call, the other to answer an incoming call, and a ringing tone generator as well as a basic two way microphone device.

With particular reference to FIG. 1 there is shown an illustration of one embodiment of the portable hot link communicating apparatus. The hot link communicator 10 comprises a wrist strap 12, a call button 14, and a call receive button 16. The optional central display 18 may comprise a digital watch and possibly some indication of the coverage level, as is standard in the display of mobile telephones. In a further embodiment the display 18 may indicate who is calling, in the instance that this is preprogrammed into the identity module. Furthermore, in a further embodiment, the display 18 can be used to indicate to which one of a plurality of stored telephone numbers the hot link communicator can initiate a call, in which case a particular sequence of key presses can be programmed to step through the list of stored numbers.

FIG. 2 shows an illustration of the ease of use of the hot link communicator within the context of mobile telephone technology.

FIG. 3 shows a circuit block schematic indicating the necessary functional components of the hot link communicating apparatus according to one embodiment based on the standard schematic for GSM. The hot link communicator differs from the standard GSM telephone

circuit in that the circuit has no keypad for entering numbers and in its place it makes use of a simplified button for automatically calling a number in the preprogrammed Identity Module.

FIG.4 shows a number of possible shapes of the hot link communicator into which the plastic housing could be moulded to make the communicator most acceptable to children.

The hot link communicator is intended to provide an emergency telephone connection using the simplest combination of technologies in a new and unique way. It is intended that the hot link communicator may contain levels of sophistication to suit different specific needs of individuals. As has been stated before, the hot link communicator may comprise a screen display. In addition, the hot link communicator may comprise the capability to initiate telephone calls to one of a number of telephone numbers stored in the preprogrammed identity module. In GSM this preprogrammed identity module is described as the SIM card or Subscribers Identity Module. Nevertheless, the SIM card is only mentioned by way of example and the invention is not limited to this particular module and any circuitry may be devised to achieve the necessary functionality of the hot link communicator pre-programed identity module.

In one alternative embodiment, the hot link communicator is able to select one of a plurality of numbers stored in the preprogrammed identity module. This can be realised in a number of ways such as programming the call initiate button 14 to toggle through the list of stored numbers wherein each is sequentially displayed on the screen. Alternatively, a number of coloured lights may be used to indicate from whom a call is being received or to whom a call is about to be initiated wherein one particular coloured light corresponds to a particular telephone number stored on the preprogrammed identity module. The use of coloured

lights may serve to be advantageous when the hot link communicator is to be used by a young child who is unable to recognised alphanumeric text on a screen display.

While only one embodiment of the present invention: the hot link communicator within the context of the digital GSM telephone system in particular, has been shown and described in detail, it will be obvious to those persons of ordinary skill in the art, that many changes and modifications may be made thereunto without departing from the spirit of the invention. For example, the hot link communicator may make use of any telephone technology such as CDMA, and DCS. Furthermore the hot link communicator may be stored in a battery recharging device when not worn such that it remains available for use when needed.

CLAIMS:

1. A portable hot link communicator device comprising a digital mobile telephone circuit, a rechargeable battery, a compact antenna, a ringing tone generator, a basic two-way microphone device for providing the facility of immediate communication or emergency telephone connection, characterised by: a simplified array of press pads to initiate a preprogrammed unique subscriber telephone number and to answer an incoming call.

2. A portable hot link communicator device according to claim 1 further comprising;

a programmable identity module comprising at least one unique subscriber telephone number.

3. A portable hot link communicator device according to claim 2 wherein at least one button of said simple array of press pads automatically initiates a call of a unique subscriber telephone number from said preprogrammed identity module.

4. A portable hot link communicator device according to claim 2 wherein said programmable identity module is preprogrammed by a mobile phone comprising the same type of identity module.

5. A portable hot link communicator device according to claims 2 or 4 wherein said programmable identity module is preprogrammed to be connected to another portable hot link communicator device.

6. A portable hot link communicator device according to any of the preceding claims for use in a mobile telephone system.

7. A portable hot link communicator device according to claim 6 wherein said mobile telephone system is a --- (GSM).

8. A portable hot link communicator device according to claim 6 wherein said mobile telephone system is a --- (DCS).

9. A portable hot link communicator device according to claim 6 wherein said mobile telephone system is a Code Division Multiple Access (CDMA).

10. A portable hot link communicator device according to claim 7 wherein said programmable identity module is a subscriber identity module (SIM).

11. A portable hot link communicator device according to any of the preceding claims wherein said simple array of press pads comprises only two buttons, one button to initiate a preprogrammed call from said identity module comprising a unique subscriber telephone number and one button to answer said incoming call.

12. A portable hot link communicator device according to any of the preceding claims further comprising a screen display.

13. A portable hot link communicator device according to claim 12 wherein said central screen display further comprises a digital watch and/or some display indications of the coverage level standard for mobile telephone.

14. A portable hot link communicator device according to claims 12 or 13 wherein said display indicates who is calling when the number is programmed in said preprogrammed identity module.

15. A portable hot link communicator device according to claims 12 to 14 wherein said central display indicates to which one of a plurality of said stored preprogrammed unique subscriber telephone numbers a call is going to be initiated by stepping in the list of said stored preprogrammed unique subscriber telephone numbers.

16. A portable hot link communicator device according to claims 15 wherein a particular sequence of key presses are programmed to step in the list of said stored preprogrammed unique subscriber telephone numbers.

17. A portable hot link communicator device according to claims 15 wherein the call initiate button is programmed to toggle through the list of stored preprogrammed unique subscriber telephone numbers.

18. A portable hot link communicator device according to any of the preceding claims wherein coloured lights indicate which one of said stored preprogrammed unique subscriber telephone numbers is received and/or which one of said stored preprogrammed unique subscriber telephone numbers is to be initiated.

19. A portable hot link communicator device according to any of the preceding claims further comprising a brightly coloured moulding.

20. A portable hot link communicator device according to claim 19 further comprising a wrist strap.

21. A portable hot link communicator device according to claim 19 further comprising a neck strap.

22. A portable hot link communicator device according to claim 19 further comprising a belt clip.

23. A method for initiating a call from a portable hot link communicator device comprising a digital mobile telephone circuit, a rechargeable battery, a compact antenna, a ringing tone generator, a basic two-way microphone device for providing the facility of immediate communication or emergency telephone connection, the method characterised by the step of:

pre-programming a Programmable Identity Module in said portable hot link communicator device comprising a simplified array of press pads with at least one unique telephone number.

24. The method for initiating a call from a portable hot link communicator device in a telephone system according to claim 23 wherein said telephone system is a GSM and said Programmable Identity Module is a Subscriber Identity Module (SIM).

25. The method for initiating a call from a portable hot link communicator device in a telephone system according to claim 24 wherein said Programmable Identity Module is preprogrammed by a mobile phone comprising the same Subscriber Identity Module (SIM).

26. The method for initiating a call from a portable hot link communicator device in a telephone system according to claim 23 to 25 further comprising the steps of:

selecting a button from a simple array of press pads, pressing said selected button in order to initiate a call of a unique preprogrammed number from said Programmable Identity Module.

27. The method for initiating a call from a portable hot link communicator device in a telephone system according to claim 23 to 25 further comprising the steps of:

selecting a specific button from said simplified array of press pads;

pressing said selected button in order to display a stored preprogrammed unique subscriber telephone number;

stepping in the list of said stored preprogrammed unique subscriber telephone numbers by repeatedly pressing said specific button;

selecting one of said numbers from said list;

maintaining pressed said button or another button from said simple array of press pad for a few seconds in order to initiate the call of said unique stored preprogrammed number from said Programmable Identity Module.

28. The method for initiating a call from a portable hot link communicator device in a telephone system according to claim 24 to 27 further comprising the steps of:

switching or flashing on a coloured light from at least one different coloured lights corresponding to said unique telephone number.

29. A method for answering an incoming call at a portable hot link communicator device comprising a digital mobile telephone circuit, a rechargeable battery, a compact antenna, a ringing tone generator, a basic two-way microphone device for providing the facility of immediate communication or emergency telephone connection, the method characterised by the steps of:

indicating that a call is coming by the ringing tone generator of said portable hot link

communicator device comprising a preprogrammed identity module comprising at least one unique subscriber telephone number and a simplified array of press pads;

pressing a specific button from said simplified array of press pads;

communicating through said two-way microphone device.

30. The method for answering an incoming call at a portable hot link communicator device in a telephone system according to claim 29 wherein said telephone system is a GSM and said Programmable Identity Module is a Subscriber Identity Module (SIM).

31. A method for answering an incoming call at a portable hot link communicator device according to claim 29 or 30 further comprising the steps of:

preprogramming said Programmable Identity Module in said portable hot link communicator with at least one unique telephone number frequently calling said hot link communicator device.

32. The method for answering an incoming call at a portable hot link communicator device in a telephone system according to claim 31 wherein said Programmable Identity Module is preprogrammed by a mobile phone comprising the same Subscriber Identity Module (SIM).

33. A method for answering an incoming call, at a portable hot link communicator device according to claim 29 or 30 further comprising the step of:

switching or flashing on a coloured light from at least one different coloured lights corresponding to said received telephone call when programmed in said preprogrammed identity module.

34. A method for answering an incoming call at a portable hot link communicator device according to claim 29 or 30 further comprising the step of:

displaying who is calling when the calling number is programmed in said preprogrammed identity module.

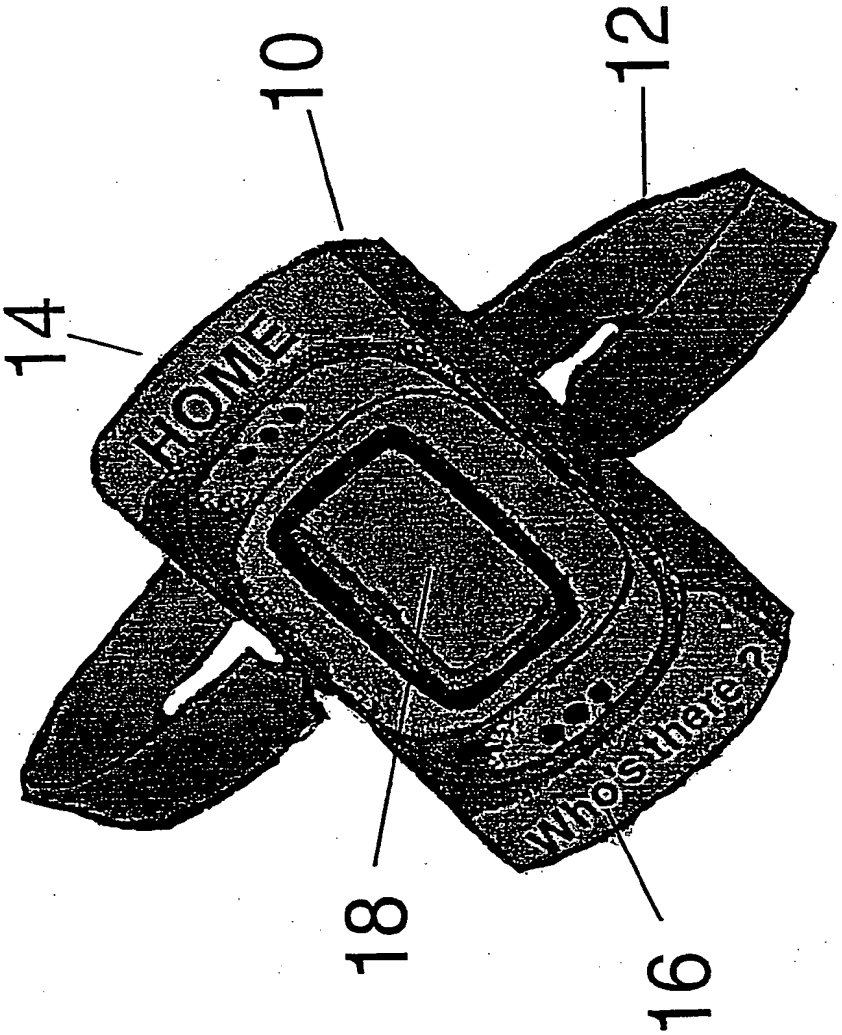


FIG.1

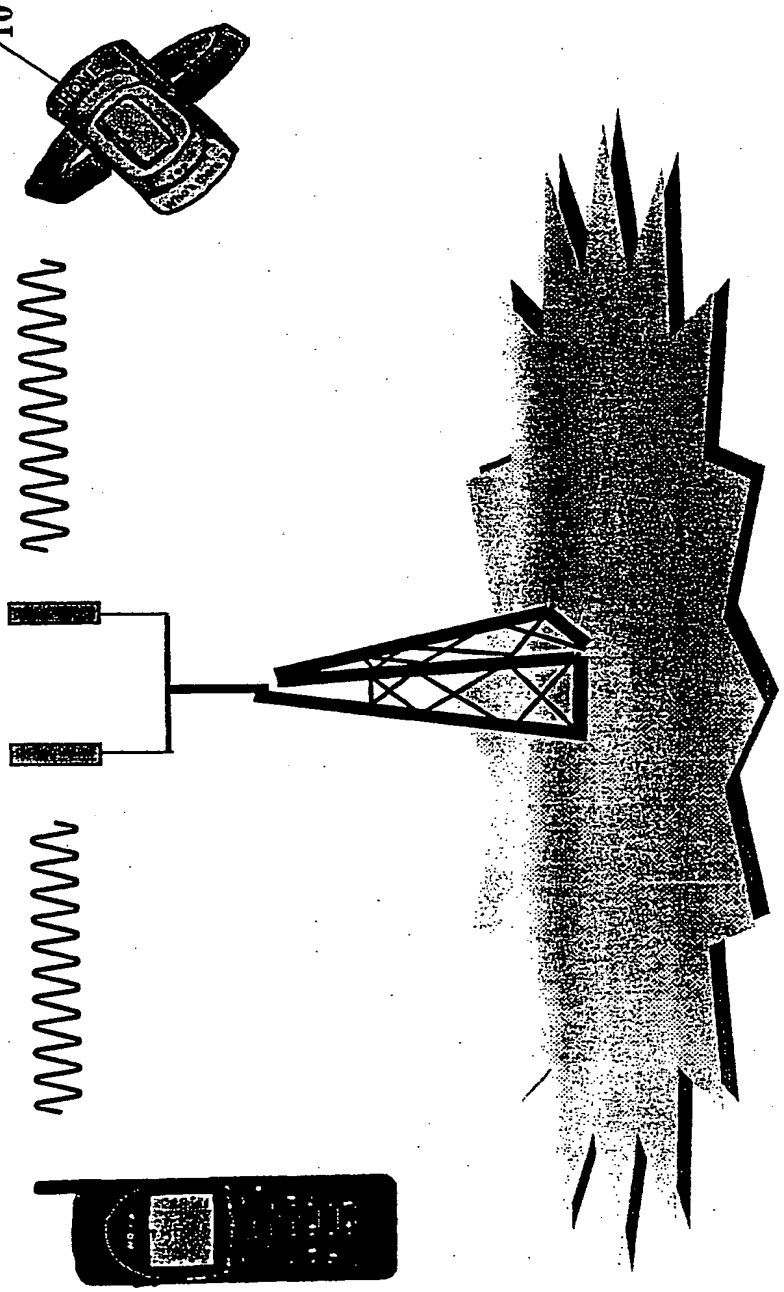
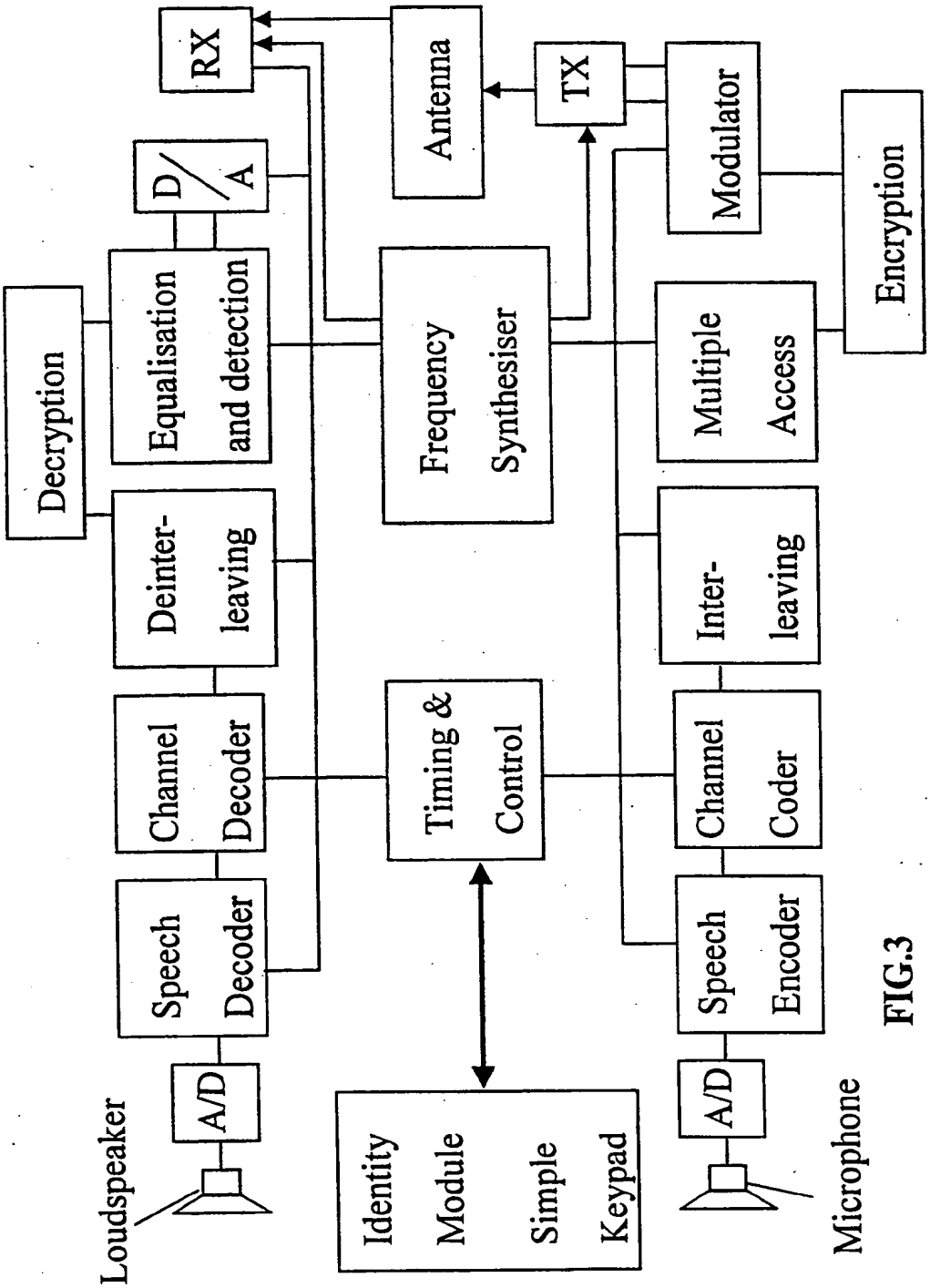


Fig. 2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Channel Decoder
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Channel Coder
Speech Decoder
Speech Encoder
A/D
A/D
Loudspeaker
Identity Module
Simple Keypad
Microphone

FIG.3

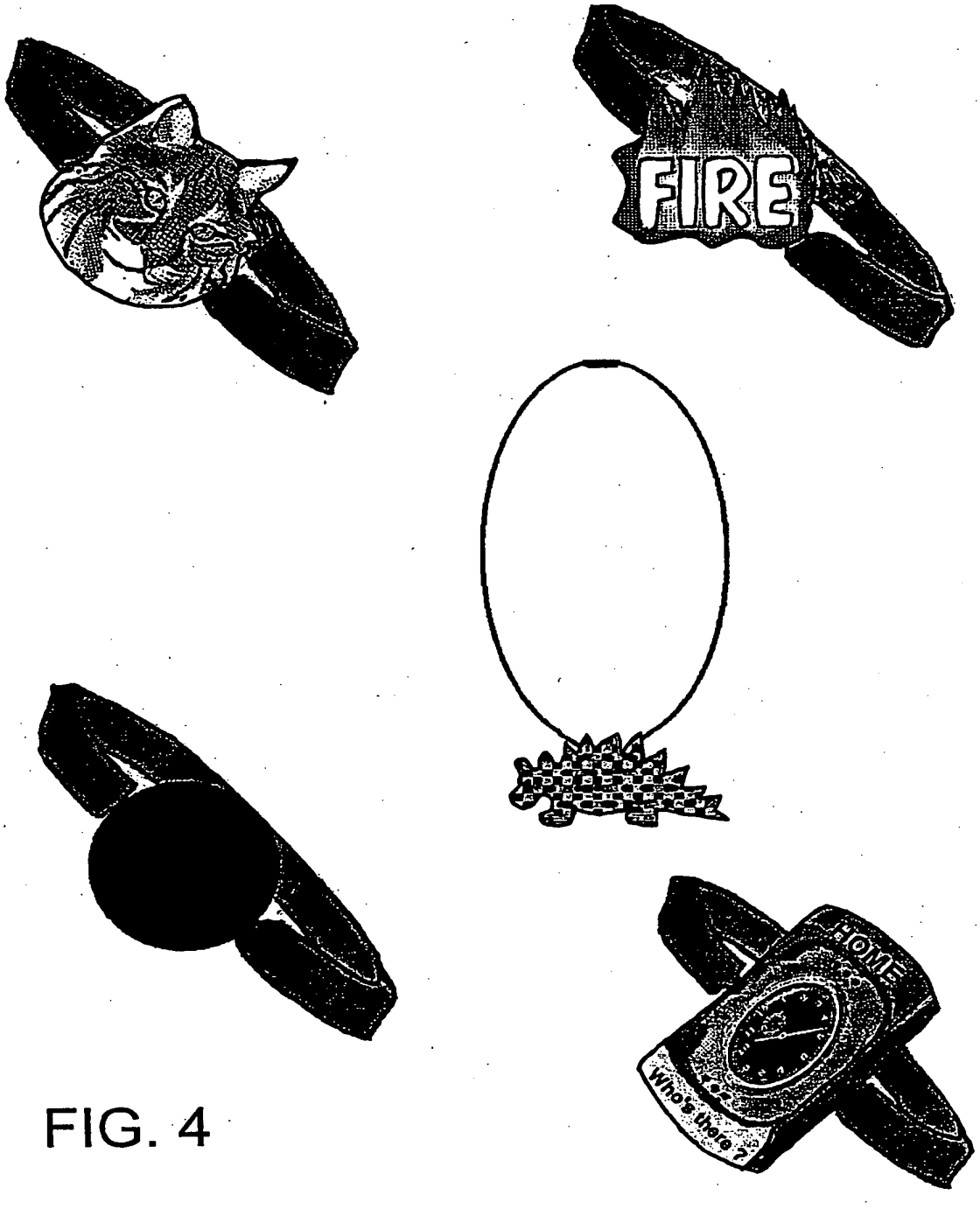

FIG. 4

INTERNATIONAL SEARCH REPORT

Interr nal Application No
PCT/GB 98/02715

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04M1/72 H04M1/66 H04M1/274

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	---	8,9,24, 30,31
X	EP 0 524 652 A (RANSOME IND LIMITED) 27 January 1993 see abstract see column 2, line 23-35 see column 3, line 1-5 see column 3, line 25-30	1,6,12
A	---	13-15
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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
8 January 1999	20/01/1999

Name and mailing address of the ISA	Authorized officer
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INTERNATIONAL SEARCH REPORT

Inter ›nal Application No
PCT/GB 98/02715

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1

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter ional Application No
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